REMARKS

Claims 1-16 and 22 are pending. By this Amendment, no claims are cancelled, claims 1, 9, 10, and 22 are amended and no new claims are added.

Applicant thanks the Examiner for the courtesy of the telephonic interview of November 30, 2006. Applicant respectfully submits that the substance of the interview is accurately and completely described in the Examiner's Interview Summary of the same.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-4, 6-16 and 22 were rejected as anticipated by Forrest et. al. '883. Claims 1, 3, 4, 6-16, and 22 were rejected as anticipated by Litwinski et. al. '085. Applicant respectfully traverses these rejections.

The Office cites Forrest et. al. '883, in particular the disclosure at column 11, line 27-56, for teaching the claimed methods. Final Office Action of September 20, 2006, p. 6. The cited passage of Forrest et. al. '883, however, discusses friction stir-welding to refine the grain structure of work-pieces after welding in order to alleviate stress-risers at the weld-joint. There is no teaching or suggestion in this passage or anywhere else in Forrest et. al. '883 of friction stir-welding as a preparatory treatment performed on portions of each of two work-pieces prior to fusion welding the prepared portions as in the claimed invention. Hence, Forrest et. al. '883 cannot anticipate or render the claimed invention obvious.

The Office cites Litwinski et. al. '085 (e.g. the disclosure at column 15, ll. 44-58) as suggesting friction stir-welding a work-piece prior to welding. Applicant notes, however, that this passage of Litwinski et. al. '085 describes extruding and friction stir-welding substantially

the whole work-piece, which may then be joined to other structural members with fasteners or welding to form an assembly. This approach would necessarily result in alteration of the grain structure in the entire workpiece.

In contrast, friction stir-welding is used in the claimed process to refine the grain structure of only the portions of two separate work-pieces that will be directly welded together. A grain geometry that provides the mechanical properties desirable for structural aircraft components is different from the grain geometry desirable for fusion welding two work-pieces together. Preparation of the work-pieces only in the region of the work-pieces to be joined as in the claimed invention enables large billets of material having the desired mechanical properties to be joined together (for producing long spars, for example) while minimally affecting the bulk structural properties of the alloy. See, e.g., Specification, p. 6, ll. 2-25; p. 9, l. 22 through p. 10, l. 2. In that Litwinski et. al. '085 nowhere teaches localized preparation of portions of two work-pieces as in the claimed invention, it does not anticipate. Moreover, to the extent friction-stir welding the bulk material, as in Litwinski et. al. '085, would necessarily alter the desired grain structure throughout the resulting structural component, it teaches away from the claimed invention. Consequently, Litwinski et. al. '085 cannot be considered to render the claimed invention obvious.

Although Applicant respectfully submits that aspects of the invention discussed above are implicit in the previously presented claim language, Applicant has amended the claims to further clarify the claimed invention. Specifically, each of independent claims 1, 9, and 10, are amended to recite that the preparatory friction stir-welding process performed on each work-piece prior to fusion welding the pieces together extends only part way into the work-piece from the surface.

These amendments are intended solely to advance prosecution of the application, and no waiver or disclaimer of subject matter is intended thereby. Applicant respectfully submits that, in view of these amendments, the claims clearly distinguish over the cited references. Accordingly, Applicant requests that the rejections be withdrawn.

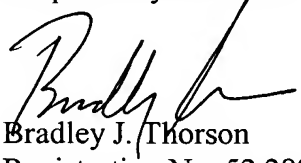
Claim Rejections Under 35 U.S.C. § 103

Claim 5 was rejected as obvious over Litwinski et. al. '085 and Forrest et. al. '883 in view of Matsumoto '155. Applicant respectfully traverses this rejection. In that independent claim 1 from which claim 5 depends has been shown to be novel and unobvious as discussed above, Applicant respectfully submits that claim 5 is novel and unobvious as well for the same reasons. Consequently, Applicant respectfully requests that this rejection be withdrawn.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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